



starry nights



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In this Issue

Telescope Buying

A personalized buying experience
Page 2-3

Starhopping 101

Getting to Know the Bright Stars
Page 4

Observers Corner

Locate M35
Page 5

Jupiter

The fifth planet from the Sun
Page 6

February Shadow Transits

Shadow's from the Galillean satellites
Page 7

Froemming Park Upgrade

Greg Gonia Grooms Path
Page 8

WAS Merchandise

Update on the clubs merchandise
Page 8

WAS Observatory

Organizing and Winterizing
Page 9

Scheduled Activities

WAS Upcoming Events
Page 10

New President

When I first joined the Wehr Astronomical Society I was 17 years old. That was back in 1981 when the organization first started. So that would make me a charter member, one of the charter members still left, the other one being Dave Beine.

Anyway, in all those years I never got real involved with the club because I was going to college and working a 2nd shift job which severely limited my time. Even when I was out of college I was stuck working a 2nd shift job for almost ten years. Until about a year ago, I finally got to 1st shift and was able to start coming to regular meetings and observing sessions regularly.

It was about a year after that Tim Grunewald started encouraging me to volunteer for the Presidency since Dave Beine had resigned and nobody was stepping forward for the position. I finally thought why not, I never have been the president of anything before, so here's my chance.

As president, one of my goals would be to increase memberships and encourage more member participation in club activities. I think the Wehr Astronomical Society has a great potential to grow and develop into a prominent astronomy club.

-Joe Carlone



A Telescope Buying Experience

In looking for a new telescope, I settled on an Intes 6" Maksutov-Newtonian riding on a Losmandy GM-8 equatorial mount. Here's why I picked this setup, and how I like it. I've only been in astronomy for two years, so this is still a learning experience for me.

The Decision

Why do I "need" a new scope? Well, there's always a desire to have something new and different, and to learn how to use it. Also, I wanted a telescope that had better optics than my existing NexStar 8, particularly for planetary viewing, and had the capability of astro-photography.



I evaluated several possibilities: a 12.5" Dobsonian, a 4" Apo refractor, a 9-1/4" Schmidt-Cassegrain (SCT), and the Intes 6" Mak-Newt. Interestingly, all these different telescopes can be had for roughly the same price.

Being an engineer, I put all the data and feelings I had about the candidates in a spreadsheet, and calculated a numerical score for each one. Crite-

ria for the evaluation were: optical quality on planets, deep sky capability, portability, photographic ability, availability of GOTO or digital setting circles (DSC's), and cost. The 6" Mak-Newt and 9-1/4" SCT came out on top, and about equal. I picked the 6" Mak-Newt. These results are somewhat subjective and may be different for you.

The Internet is a great place to get information, especially from user news groups on specific scope types and manufacturers. For example, Google Groups has a number of astronomy-related user groups (see <http://groups.yahoo.com/group/MakScopes> for the group on Maksutov scopes). Monitoring these discussions will give you a lot of information on the quality and reliability of the product, as well as innumerable tips to help make the product work better.

After making the decision, I placed the order and waited. I had already downloaded the manual for the scope, mount, and DSC's that I bought. I contented myself with reading them over and over for the next 10 weeks.

The Mak-Newt Telescope

The scope is made in Moscow, Russia and is sold by several dealers in the US, including Orion which sells it as the Argonaut. The Mak-Newt is based on the Newtonian telescope which has a parabolic-shaped main mirror, and a flat secondary mirror held in the front of the tube by stiff vanes. The Maksutov design differs by using a thick spherical corrector plate at the front of the scope to allow use of a more easily-made spherical main mirror. The flat secondary mirror is attached to the corrector. Like the Newtonian, the light exits the side of the tube near the front. (See the article on Dmitri Maksutov in the December 2001 *Sky & Telescope*.)

The German equatorial mount

Advantages:

- Tracks objects very accurately as the Earth turns.
- Best mount for long exposure photography.
- Can be easily outfitted with GOTO or DSC's.
- Breaks down to lighter pieces than a fork mount.
- Looks cool.

Disadvantages:

- More involved setup.
- Not as easy to point toward an object in the sky as a Alt-Az mount.
- The eyepiece and finder rotate around, and may be at inconvenient height.
- It's hard to point at things near the N. Pole.
- More expensive than Dobsonian.

An advantage of this design is a very small secondary mirror, reducing light blockage and increasing contrast. My 6" has a central obstruction of less than 20%. This compares to about 33% for a typical Schmidt-Cassegrain. This is reputed to yield images almost as sharp and high in contrast as a high quality refracting telescope with no obstruction.

My impression so far is that the scope delivers very sharp planetary views with high contrast, even when the sky steadiness is poor. The Moon crater Plato shows 3 or 4 small craterlets on its floor. Jupiter shows a lot of banding and detail on nights of steady seeing. Star images are nice sharp pinpoints across the field.

Disadvantages to this type of scope are: large size (38" long), a required cool down time to allow the mirror and corrector plate to come to ambient temperature (about 2 hours to 32 deg. F), and the 6" aperture is marginal for the dim deep sky objects. Also, a scope of this type that's larger than about 6" or 7" requires a very substantial mount due to its size and weight. Because of the small secondary mirror, the fully illuminated field is small, and some light fall-off

occurs near the edges of the image. This is not noticeable visually, but can cause problems for photography. To test the cool down, I only waited about 15 minutes after taking it out in 35 degree weather. The Moon looked fairly sharp, but a star test on a bright star showed a large flare on the bottom of the in-focus image. Waiting another 1 1/2 hours eliminated the problem.

My scope came with a test report that certified the optics as 1/7 wave p-v. For optics to be considered acceptable the wavefront error should be a 1/4 wave or less.

The Mak-Newt holds collimation quite well. After our ill-fated 1,300 mile trip to the Great Plains Star Party (cloudy, only 1 hour of viewing), the scope's collimation didn't budge, while my 8" SCT that was along for the ride got way out of whack.

The GM-8 Mount

Along with this scope I ordered a Losmandy GM-8 German equatorial mount. This is the first scope I've had with this type of mount, and I wanted to learn to use one. It needs to be polar aligned to track the stars accurately. This is accomplished by using the polar alignment scope that peers through the right ascension axis. A good alignment can be achieved by positioning Polaris and a second star with the illuminated marks in the scope by adjusting the mount alignment controls. Once aligned, the mount tracks very accurately.

It has different tracking rates for the Moon, stars and the Sun. Also, a hand controller allows for smooth centering of the object in the eyepiece. This mount provides a sturdy platform for the 25 lb. telescope. Losmandy has a reputation for making very attractive machined mounts, and this is no exception. It's quite beautiful, if you like that kind of thing.

DSC or GOTO?

Since my first two telescopes had GOTO, I decided to get Digital Setting Circles with the new scope. I hoped this would help me better learn the sky, and also let me use the scope completely manually. The DSC's are quite accurate if the polar alignment is good (within 1/2 a degree). I can move the scope manually without ruining the alignment. The Sky Commander DSC's that I have are supposed to have a 2-star method that does not require an accurate polar alignment, but does not appear to work well with an equatorial mount.

Conclusions

I am happy with this choice. The planetary views are very good, and deep sky objects are also quite good. I have still to try my hand at photography. If you see me at the Wehr observing site (Froemming Park, see page 10), please come over and let me show it to you.

- Phil Schumacher



The Losmandy GM-8 German equatorial mount

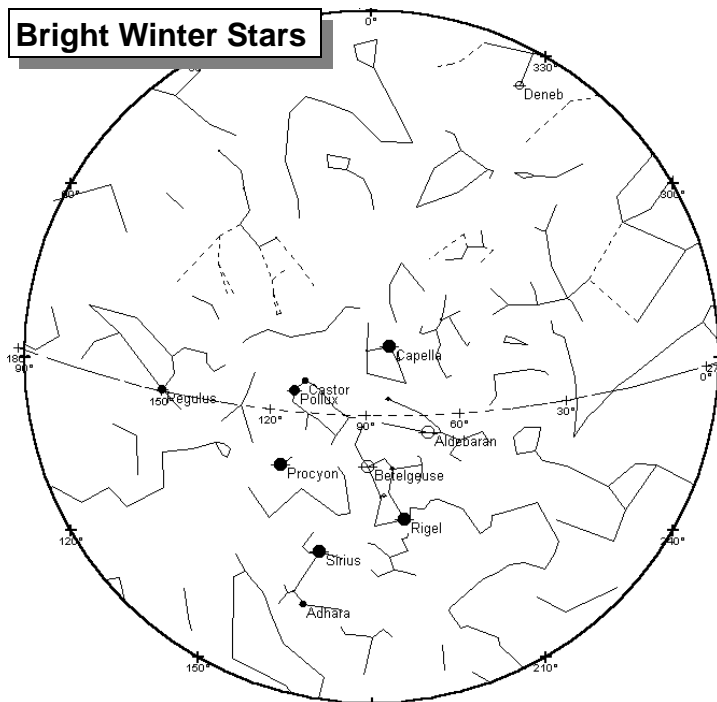


Starhopping 101: Getting to Know the Bright Stars

Table of Bright Stars

Star	Constellation
Aldebaran	Taurus
Altair	Aquila
Antares	Scorpius
Arcturus	Bootes
Betelgeuse	Orion
Capella	Auriga
Castor	Gemini
Deneb	Cygnus
Fomalhaut	Piscis Austrinus
Pollux	Gemini
Procyon	Canis Minor
Regulus	Leo
Rigel	Orion
Sirius	Canis Major
Spica	Virgo
Vega	Lyra

Bright Winter Stars



Many beginners feel that they must buy a telescope to start out in astronomy. The best advice I can give you is to learn the sky a little before you purchase your telescope. Many people are inclined to purchase a computer-controlled or “go to” telescope to make it easier to locate objects in the sky and thus think that they can skip learning the sky. Whether you purchased a simple telescope or a computer-controlled telescope you still will need to learn the sky. Being able to locate the bright stars will help you in learning the sky. The one thing they don’t tell you in the sales literature for the computer-controlled telescopes is that in order for the telescope to know where it is pointing, you must align (or point) it to at least two of the bright stars in the sky. And for us city dwellers, we tend to know the constellations by which bright stars we can see.

The best thing you can do is to buy yourself a planisphere or use the monthly sky maps in the astronomy magazines. This will show you what the sky looks like when you are out observing. I have included a sample all sky chart that will give you an idea of what stars are up for the winter. Above is a table, for all year, of the bright stars and the constellations they are in.

Once you have located a bright star, look at the

map to identify it. If you are not sure you have correctly identified it, try to identify the other bright stars in the sky or try to identify the constellation the star is in by looking at the fainter stars around it. This will take practice and patience. Once you are able to identify the bright stars and the constellations they are in, you can move on to identifying the other constellations. If you can identify the stars mentioned above, you can locate 14 constellations. That’s a pretty good start.

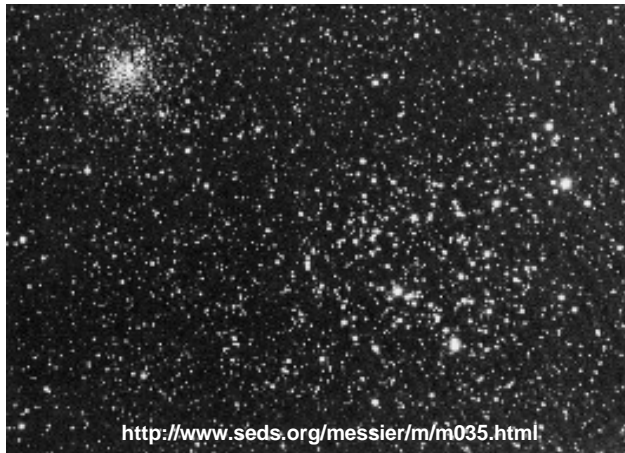
I always tell people to start with what you know. If all you can identify is the Big Dipper (Ursa Major) in the sky, then start there and try to identify the constellations around it. You can locate Arcturus and Spica by following the handle of the Big Dipper in an arc and remembering this phrase – “Arc to Arcturus and spike to Spica”.

You can think of the bright stars as the obvious landmarks of a big city of stars. When you are new to a city you may know how to find the grocery store, the bank and a gas station or two. As you get more familiar with the city you can find other buildings. The same is true when you use your map to get to know the night sky. Eventually the sky will become familiar to you, but it takes time.

- Tim Grunewald



Observers Corner: M35

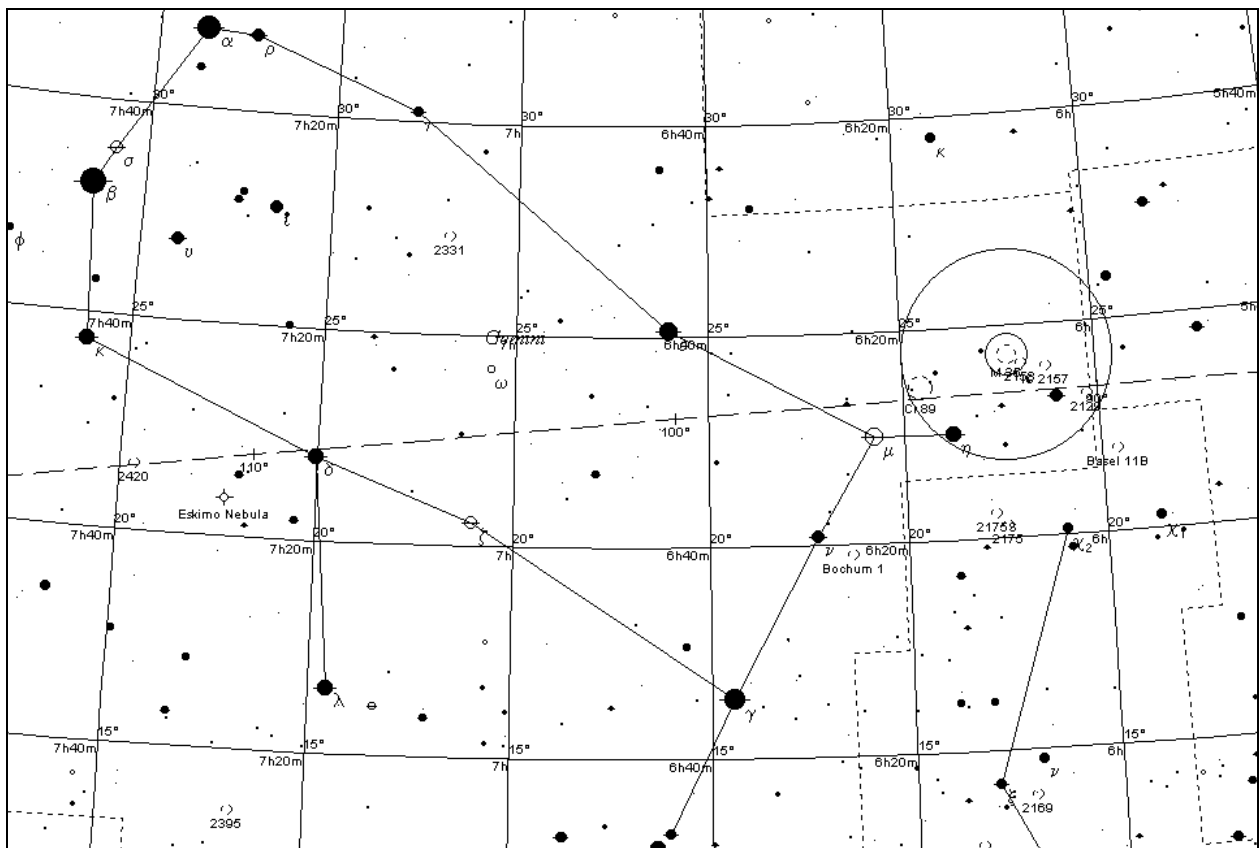


This quarter we will be locating a well know open cluster in Gemini – M35. This open cluster of 200 stars can be seen even with binoculars, as its actual size is 28' in diameter and its magnitude is 5.1. This cluster is 2,800 light years away which would give its true diameter to be about 20 light years.

We start at the foot of the twin Castor, which is the twin on the top of our map. Start by locating the two yellow stars μ Geminorum and η Geminorum. Follow the line that joins these two stars, going away from Gemini, until you see another star (1 Geminorum) that is just a little bit dimmer than these two stars. It is next to NGC 2129. Now picture M35 at the intersection of crosshairs and the stars 1 Geminorum and η Geminorum lying on the horizontal and vertical crosshair respectively. If you have dark enough skies, you should be able to see a dim smudge in your finderscope. Line up your telescope as stated and M35 should be in the eyepiece field of view.

Also in the area is NGC 2158, which can be seen right next to M35 with a low power eyepiece if you are in dark skies. It is magnitude 8.6 and is 5' in diameter. M35 and NGC 2158 are actually about the same physical size. NGC 2158 appears smaller because it is about 6 times farther away.

- Tim Grunewald



JUPITER 4

Jupiter, is the fifth planet from the sun, and is one of the most interesting planets to observe for amateur astronomers of all skill levels. As most people know, Jupiter is the largest planet in our solar system. It is large enough to hold all objects of our solar system, excluding the sun. It is about 5.5 AU from the sun (AU stands for Astronomical Unit, which is equal to the average distance from the earth to the sun or 93 million miles). Jupiter is eleven times the diameter of the Earth and about 320 times the mass. Jupiter has at least 28 moons, most of which are thought to be captured asteroids because of their small size and irregular orbital inclinations.

Most observers of Jupiter enjoy watching the dance of the four easily visible Galilean satellites. These moons were named after Galileo for his discovery of them. The four moons in order from the smallest orbital radius from Jupiter are: Io, Europa, Ganymede, and Callisto. These four moons are easily visible in binoculars, and their positions around Jupiter change even over the course of the night. The change in the position of the moons is most noticed from day to day. All the moons are larger than the Earth's moon except for Europa. The largest moon, Ganymede, is larger than Mercury!

Jupiter rotates on its axis very quickly, in only about 10 hours. So, most of the planet can be observed in one night. Jupiter has a very complex atmosphere which is made up of 78 percent hydrogen and the rest is made up of mostly helium, with small traces of many other gases. The tops of its clouds are at a chilly -200° Fahrenheit. Most people are familiar with Jupiter's equatorial cloud bands or the reddish-brown cloud bands on either side of the equator. These bands are easily visible in the smallest of telescopes.

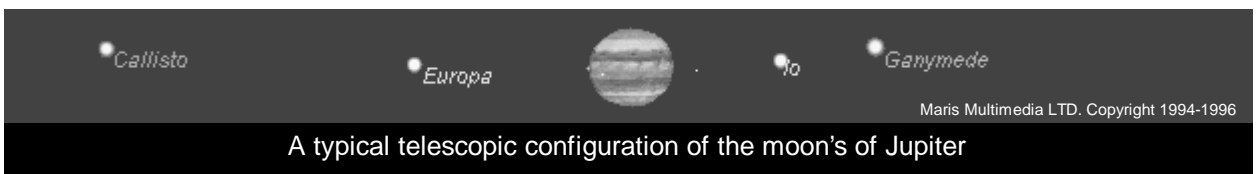
Jupiter's great red spot is another favorite of observers with slightly larger telescopes. The spot has been described as a huge hurricane which has been spinning for at least 300 years. Larger telescopes are usually needed because of the low contrast between the red spot and the south equatorial band in which it rotates with.



Jupiter has something to offer for observers of all skill levels.

Jupiter has something to offer for observers of all skill levels. Whether you are a beginner with your new Christmas telescope or a veteran with all the bells and whistles, Jupiter is a target everyone should check out, because it never shows the same view twice.

-Adam Machajewski



stepping into a puddle during the dark hours of public observing.

In late summer, Dave Beine met with Mr. Youngs and a County architect at the park to discuss our proposed improvements. As it stands for the foreseeable future, the County's hands are fiscally



The soggy path before Gregs work...
Stop by to see the finished product.

tied, and we would need to come up with some significant matching money before anything serious could be contemplated for Froemming Park.

Well, as you can see from the photo, there wasn't enough gravel to do the job, so I groomed the entire length of the driveway as best I could, so that there would at least be a foot-wide path along the entire northern edge. I first hauled quite a number of buckets of larger gravel (found along the grassy edges of the driveway west of the gate marking the observing field's western boundary) to fill in the northern portions of the deeper potholes. During my afternoon stint, a squall line of thunderstorms passed through with heavy rain, and the sun came out afterwards to beautifully illustrate my final result.

I will be in contact with the County again to get more gravel in place as the opportunity arises for them. The County budget is extremely tight, and there is no additional money allocated for Froemming Park improvements, so they do the best they can whenever they have "leftovers" from a regularly scheduled paving project. Our observatory building plans are on hold for now, but there

are some activities being worked on to perhaps start up a fund raising campaign in future years. Stay tuned...

-Greg Gonia



New Merchandise for the New Millennium

New for 2002 is a complete, revamped line of W.A.S. merchandise in warmer, friendlier colors, as well as more modern styles. Besides short sleeve T-shirts, we will now offer long sleeve Ts (helpful to keep those summertime mosquitoes at bay). We will also be offering sweatshirts and hooded sweatshirts (with a front pouch to help keep your fingers nimble during brisk temperatures). All four garments will have a reduced size logo in the upper left chest area. Our popular polo shirt will have wider, longer (to the elbow) short sleeves, with a pocket in the upper left chest area, and a smaller logo in the upper right area. Caps will now be in a sleek looking style, made of fabric with our club name embroidered across the front. All apparel will have as large of a color and size assortment as we can get, for the Board-approved budget allowance.

All this has come about through the volunteer assistance of club member Jackie Mau, who spoke up at our October meeting when I solicited suggestions for a future merchandise order. Her insight into what looks good, and in what colors, has really made a difference during the selection and ordering process. Thanks Jackie!

Final prices haven't been set yet as of press deadline time, however, everything will be made available at cost (as was our previous merchandise). It has been over six years since our last order, so you know that retail prices are going to be higher than before. A new order form will be developed, and it, along with the merchandise, will be available at future monthly meetings at the Wehr Nature Center. For further details, or to order directly, contact Greg Gonia.



Winterization

The sixteen foot WAS observatory to be, got a winterization in October. Todd Weiler, Greg Gonia, and I set out on a dreary Saturday morning to cover the dome. The observatory storage site is just off of state highway 45 and north of Watertown Plank Road on a Milwaukee county storage facility. We came across the four sections of the dome and a neat stack of the remaining parts of the building. We decided to put the dome sections around the base pieces as you can see in the picture. We carefully and painstakingly positioned each of the four pieces around the base. After we put each piece up we sprayed the edges with white paint to prevent the cuts from rotting anymore than they already had. All this took approximately an hour to perform. Now it was time to cover the pieces with the tarp. Todd supplied the tarp, which was huge, approximately 20 x 40 feet. The tarp fit folded over and covered the observatory well. We nailed firing strips along the bottom of the pile to secure the tarp for the winter ahead. As we finished off, the rain began to fall, so with Greg's camera, I snapped the last picture. We had some sodas and chatted a while as the rain continued to fall. We agreed our creation resembled the "Mother ship." Hopefully our efforts will pay off when the observatory finally gets a home.

Thanks for the supplies, Todd .

-Adam Machajewski



Everything has a special place



A Job Well Done

From the Editor

I wanted to thank everyone for the support I received after publishing my first issue of *starry nights*, but also wish to apologize for the errors in the last issue. Hopefully this issue will prove myself to you all. Also, I would like to thank the contributors of this edition for their prompt responses to my e-mails for articles. If you do not have e-mail or did not receive one, I invite you to submit an article for the next quarter's newsletter. I would like to see articles from not only members but but the public as well about how we are doing as an astronomy club or stories about a recent astronomical find or any other astronomy related story, pictures are also great. The stories/pictures can be dropped off at any meeting or e-mailed to me at AMachajewski@netscape.net. Thanks again.

-Adam Machajewski

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<http://www.execpc.com/~tgrunewa/astro/was.html>

SCHEDULED ACTIVITIES

FOR

The Wehr Astronomical Society

<http://www.execpc.com/~tgrunewa/astro/was.html>

Regular Meetings

(Free and Open to the Public)



Tuesday, January 8, 2002, at 7:00 p.m.

At the Wehr Nature Center

Jay Wichmann will be displaying a slide show of recent photographs of Mars taken by the Mars Global Surveyor Orbiter.



Tuesday, February 12, 2002, at 7:00 p.m.

At the Wehr Nature Center

Patrick Huth of the NASA Aerospace Education Specialist for NASA Glen Research Center in Ohio. He will be speaking on Human Exploration and Development of Space.



Tuesday, March 12, 2002, at 7:00 p.m.

At the Wehr Nature Center

TBA

Observatory Activities

(Free and Open to the Public)

January 4	7:00	Deep sky observing. The story of Cassiopeia. See the Mars, Jupiter (GRS transit 9:21pm) and Saturn.
January 18	7:00	Observing the moon and deep sky objects. See a crescent moon and the brighter deep sky objects. See Mars, Jupiter (GRS transit 10:52 pm) and Saturn.
February 8	7:00	Deep sky observing. Orion the Hunter and the Great Nebula. See Mars, Jupiter and Saturn.
February 22	7:00	Observing the moon and deep sky objects. See a gibbous moon and the brighter deep sky object. See Mars, Jupiter and Saturn.
March 15	7:00	Deep sky observing. Come early and try to see a young moon (one day old). See Mars, Jupiter (GRS transit 7:10 pm and Io' s shadow) and Saturn.
March 22	7:00	Observing the moon and deep sky objects. See a 1st quarter moon and the brighter deep sky objects. See Mars, Jupiter (GRS transit 7:58 pm) and Saturn.

Note: All Observatory dates fall on a Friday, and are held at Froemming Park. GRS transit: When Jupiter' s Great Red Spot is in the middle of the planet.